RESTRICTED CIRCULATION

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SEPTORIA IN THE NORTH

1. INTRODUCTION

Septoria is a fungal disease of wheat which is not usually of economic importance in the North of England. For this reason, and because the available chemicals are only moderately effective, routine fungicidal sprays are not employed. However, in occasional years serious outbreaks occur, and it would be useful to know of this in advance so that preventive action could be taken at a relatively early growth stage of the crop.

2. DISEASE DATA

The National Leaf Disease Survey has collected data from about 17 farms in each of the eight ADAS regions in England and Wales since 1970. The information used here is the average percentage of area on the second leaf affected by lesions due to Septoria nodorum (the common strain) in each region. Assessments were made early in July.

3. METEOROLOGICAL DATA

Septoria is spread by rain-splash of spores, which then require a period of high humidity for germination. Dr J E King, in Septoria Progress 1971, suggested the following criteria for spring and summer infection:-

either a. rain on 2 out of 3 days totalling at least 10mm, with rain on the first day,

or b. rain on 3 consecutive days totalling at least 5mm,

or c. rain on 4 consecutive days,

with a relative humidity of at least 90% at 0900 hr on at least one day in each period.

Critical days for infection were assessed on this basis and counted for each month March-August 1970-1974 at Leeming. This station was chosen as being reasonably representative of the main wheat growing areas of both the Northern and Lancashire/Yorkshire regions. Results are shown in table 1, together with the disease assessments in the field.

TABLE 1. Critical days for Septoria infection and observed disease incidence.

	Critical Days for Infection						% Infection	
Year	March	April	May	June	July	August	North	Lancs/Yorks
1970	4	4	0	0	5	8	1	1
1971	6	4	6	12	7	10	5	10
1972	16	9	5	11	6	7	33	25
1973	1	10	4	8	13	14	26	15
1974	9	0	4	3	9	5	7	12

4. ANALYSIS

Correlation coefficients between critical days in each month and infection were calculated, and are given in table 2.

TABLE 2. Correlations of critical days and disease.

Month	Lancashire and Yorkshire Region correlation coefficients			
March	0.67	0.87	0.90	March + April + ½ (May + June) r = 0.92
April	0.55			
May	0.67	0.70		
June	0.63			
July	0.22			
August	-0.02			

Month	Northern Region correlation coefficients			
March	0.41	0.82	0.76	March + April + ½ (May + June) r = 0.81
April	0.83			
May	0.41	0.55		
June	0.55			
July	0.35			
August	0.28			

Moderate positive correlations were found until July and August (after the field survey) when the coefficients drop to small values. An unexpected feature was the high correlation for the spring months, since it had previously been thought that June weather was overriding importance.

Next, March/April and May/June critical days were progressively combined, with a general improvement in correlation, particularly in Lancs/Yorks (see table 2). Finally, noting that March/April weather was more strongly correlated with disease than May/June weather, correlations were obtained with (critical days in March/April) + ½ (critical days in May/June). The correlation coefficients were 0.92 and 0.81 for the Lancs/Yorks and Northern regions respectively.

5. CONCLUSIONS The values of r = 0.8–0.9 found in this study suggest that a forecasting scheme for Septoria is within reach. The results would require confirmation over a longer period of years and in other regions.

Any comments or suggestions on this paper should be referred to the author.

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